

# Symptom Assessment in Home Healthcare Using Digital Pens

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## ABSTRACT

We have developed a system allowing patients subject to palliative advanced home care to frequently submit symptom assessments from their homes. Using digital pen technology developed by Anoto™ AB, symptom assessments are transferred digitally over the GSM mobile phone network from the patient's home to the hospital clinic. The system is evaluated during spring 2003 at the hospital-based home care (HBHC) clinic of Linköping University Hospital.

## BACKGROUND

Symptom control is a cornerstone of advanced hospital-based palliative home care. A prerequisite for adequate symptom control is high-quality and frequent symptom assessments [1]. Today, patients in home care report their symptoms during the caregivers' home visits, or by calling the caregivers at the clinic. This way, symptoms are not reported as often as caregivers and patients wish for, and furthermore, symptoms are not assessed and taken care of in a structured way.

In order to make possible a more structured management of patients with pain symptoms in palliative home care, a pain management clinical guideline has been introduced at the HBHC clinic of Linköping University Hospital. The guideline includes patients assessing pain  $\geq 35$  mm (VAS 0-100 mm) and states, among other things, that treatment should be followed-up by the use of a pain diary where patients assess pain up to three times a day (see figure 1).

Date: ..... Time: ..... No extra dose

Number of extra doses since last assessment : (mark each with a cross) ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

No pain \_\_\_\_\_ Severe pain

Assessed by: Patient ☐ Help from next-of-kin ☐ Help from caregiver ☐

Signature: ..... Send to LAH

Figure 1. The pain diary

The system makes use of Anoto™ functionality [2] allowing paper-based interfaces to digital systems. Anoto™ functionality consists of digital pens, paper with a proprietary dot pattern, and an infrastructure for Anoto™-based services.

## THE SYSTEM

The system implements a digital version of the pain diary of the clinical guideline. The pain diary is printed on digital paper enabling Anoto™ functionality. Patients subject to the guideline are supplied with digital pens and mobile phones allowing them to submit assessments. The assessments are sent over the GSM/GPRS mobile phone network and stored in a database at the hospital.

The caregivers use the clinical application developed within the project to monitor the patients' pain status and to do follow-up on pain treatment. The application also allows caregivers to view diagrams of pain assessments and use of analgesics over time as well as the administration of patient information and digital pens.

Date: 2003-01-10 Time: 15:04

Extra doses: 3 VAS: 3

☒ ☒ ☒ ☐ ☐ ☐ ☐ ☐

Correct Error

Assessed by: The patient him/herself ☒ ☐ ☐

Signature: 96

Figure 2. The clinical application

The system is at the time of writing under study at the HBHC clinic of Linköping University Hospital.

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## REFERENCES

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